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Piperaceae Bolivianae.

BY CASIMIR DE CANDOLLE.

PIPER L.

Sectio 2. Enckea C. DC. Prodr. **16**¹: 243.

1. P. TENUE Kunth in H. et B. Nov. Gen. **1**: 56.

In Bolivia ad confluentem fluminum Beni et Madre de Dios (Rusby, no. 2184 in Herb. Boiss.).

Sectio 3. Steffensia C. DC. *l. c.*, 251.

2. P. WARAKABOURA C. DC. Prodr. **16**¹: 257.

In Bolivia ad confluentem fluminum Beni et Madre de Dios, Augusto (Rusby, no. 2182 in Herb. Columbia University).

3. P. BANGII C. DC. Bull. Torr. Bot. Club, **19**: 49. 1892.

In Boliviae prov. Yungas (Rusby, no. 330a in Herb. Columbia University).

4. P. LANCEOLATUM R. et Pav. Fl. Per. **1**: 36. *pl. 61, f. b.*

Unduavi in Bolivia, alt. 8,000 ped. (Rusby, no. 2178 in Herb. Boiss.).

5. P. PSILOPHYLLUM C. DC. Bull. Torr. Bot. Club, **19**: 47. 1892.

Limbi apice acuminati in sicco pallide virescentes et subglaucescentes.

In Bolivia (Rusby, no. 2900 in Herb. Cand.).

6. P. TRICHORHACHIS, foliis breviter petiolatis glabris oblongo-ellipticis basi leviter inaequali acutis apice acuminatis, nervo centrali ex $\frac{1}{2}$ — $\frac{1}{3}$ longitudinis nervos adscendentes utrinque 5 mittente petiolo basi ima vaginante, pedunculo glabro petiolum 2–3plo superante, amento quam folii limbus brevior floribus spiraliter insertis rhachi hirsuta, bractae vertice lunulato carnosio margine praesertim antice hirsuto pedicello utrinque hirsuto, bacca subtragona ad rhachin elongata glabraque.

In Boliviae prov. Yungas, Decembri (Weddel, no. 4264 in Herb. Mus. Par.).

Ramuli glabri laeves, amentiferi circiter 2 mm. crassi. Collenchymatis fasciculi discreti in sectione transversali transverse elon-

gati et zona interna parce libriformes, fasciculi intramedullares 1-seriati. Limbi in sicco coriacei nitidi opaci pallescentes parce fusco-punctulati, circiter 13 cm. longi, 5 cm. lati. Petioli circiter 6 mm. longi. Amenta submatura 3 mm. crassa, fere 7 cm. longa. Stamina 4. Stigmata 3, sessilia, brevia.

7. *P. TRIGONIASTRIFOLIUM*, foliis brevissime petiolatis lanceolatis basi leviter inaequali acutis apice longiuscule acuminatis utrinque glabris, nervo centrali vix ad $\frac{1}{2}$ longitudinis suae nervos alternos adscendentes utrinque 4-5 mittente, petiolo basi ima vaginante, pedunculo petiolum aequante glabro, amento quam folium dimidio brevius apice subacuto, bracteae vertice truncato triangulari margine pedicelloque lato hirsutis, bacca subtetragona vertice hirsuta, rhachi hirtella.

In Bolivia (Bang, no. 2197 in Herb. Cand.).

Ramuli glabri laeves, amentiferi 2.5 mm. crassi, collenchymatis fasciculi discreti zona interna libriforme, fasciculi intramedullares 1-seriati. Limbi in sicco coriacei opaci pellucido-punctulati glaucescentes ad 14 cm. longi et ad 5 cm. lati. Petioli vix 5 mm. longi. Amenta fere matura, circiter 5 mm. crassa. Stamina 4, stigmata 3 sessilia linearia.

8. *P. BOLIVIANUM* C. DC. Prodr. **16**¹: 280.

In Boliviae prov. Yungas (Rusby, no. 540 in Herb. Columbia University).

9. *P. RUSBYI* C. DC. Bull. Torr. Bot. Club, **19**: 47. 1892.

In Boliviae prov. Yungas (Weddel, no. 2296 in Herb. Mus. Par.).

10. *P. GAUDICHAUDIANUM* Kunth, Linnaea, **13**: 639. 1839.

In Prov. Yungas (Rusby, no. 345 in Herb. Boiss.).

11. *P. ACUTIFOLIUM* R. et Pav. Fl. Per. **1**: 38. *pl.* 64, *f.* a.

In prov. Yungas (Rusby, no. 215 in Herb. Boiss.).

12. *P. OBLIQUUM* R. et Pav. Fl. Per. **1**: 37. *pl.* 63, *f.* a.

Ad Mapiri (Rusby, no. 2174 in Herb. Boiss.).

13. *P. BLANCHETII* C. DC. Prodr. **16**¹: 318.

Ad confluentem fluminum Beni et Madre de Dios (Rusby, no. 2183 in Herb. Boiss.).

Sectio 4. Carpunya C. DC. **16**¹: 326.

14. *P. PAULOWNIFOLIUM* C. DC. (in Durand et Pitt. Primit.).

In Bolivia (Rusby, no. 2640 in Herb. Columbia University).

Sectio 5. Potomorphe C. DC. Prodr. **16**¹: 331.

15. *P. UMBELLATUM* Willd. Sp. Pl. **1** : 166.
Ad Mapiri (Rusby, no. 2173 in Herb. Boiss.).
16. *P. PELTATUM* L. Sp. Pl. 42. 1762.
In Bolivia (Bang, no. 1607 in Herb. Boiss.).

PEPEROMIA R. et Pav.

A. Amenta in apice caulis paniculatim disposita.

1. *P. VESTITA*, foliis longiuscule petiolatis oblongo-ellipticis basi acutis apice obtusis utrinque dense tomentosis, nervo centrali nervos adscendentes utrinque 4–5 mittente, amentis in apice caulis paniculatim dispositis ipsis quam folia brevioribus et brevissime pedunculatis, bractea orbiculari, ovario emerso ovato basi breviter angustato apice longiuscule et oblique rostrato sub rostro antice stigmatifero.

In Bolivia (Bang, no. 2645 in Herb. Columbia University).

Herba ut videtur erecta caule dense tomentoso. Limbi in sicco membranacei crebre pellucido-punctati ad 10.5 cm. longi et ad 4.5 cm. lati. Petioli fere 3 cm. longi, dense tomentosi. Panicula tomentosa ramosa circiter 20 cm. longa, ramis subverticillatim amantiferis. Amenta filiformia fere ad 7 cm. longa et densiflora, squamis oblongis (?) cito caducis fulta. Antherae rotundatae quam filamenta breviores. Stigma globosum minute papillosum.

B. Amenta in foliorum axillis solitaria aut terminalia aut apice ramuli geminata.

- § 1. *Ovarium apice stiliferum aut saltem sub stigmate distincte attenuatum.*
2. *P. PARVIFOLIA* C. DC. Seem. Journ. **4** : 133. 1866.
In Bolivia (Rusby, no. 1860 in Herb. Columbia University).
 3. *P. UMBILICATA* R. et Pav. Fl. Per. **1** : 30. *pl.* 45. *f.* b.
a. macrophylla C. DC. in Prodr. **16**¹ : 394.
In Bolivia (Rusby, no. 2448 in Herb. Columbia University).
 4. *P. MANDONII* C. DC. *l. c.*, 395.
Ibid. (Rusby, no. 1719 in Herb. Columbia University).
 5. *P. BRITTONII* C. DC. Bull. Torr. Bot. Club, **19** : 254. 1892.
Post : *foliis ternis*, adde : *ovatis*.

§ 2. *Ovarium neque stiliferum neque sub stigmate attenuatum.*

**Folia alterna.*

† *Ovarium stigma in apice summo aut paullo infra apicem et oblique gerens.*

6. *P. TALINIFOLIA* Kunth, H.B.K. Nov. Gen. 1: 62, pl. 8.

In prov. Yungas (Rusby, no. 330 in Herb. Boiss.).

7. *P. SORATANA*, foliis longiuscule petiolatis adultis oblongo-lanceolatis supra ad nervos et subtus ubique pilosulis 5-nerviis, amentis longiuscule pedunculatis axillaribus terminalibusque filiformibus adultis folia parum superantibus, bractea orbiculari ovario emerso obovato apice obtuso et oblique stigmatifero.

In provincia Larecaja viciniis Sorata Quiliguaya ad rivum in nemoribus, alt. 2800 m. Septembri (Mandon, no. 1115 in Herb. Mus. Par.).

Herba erecta (?) caule pilosulo inferne radicante in sicco complanato et ad 6 mm. crasso. Limbi ad 9 cm. longi et ad 2.5 cm. lati in sicco membranacei pellucido-punctulati. Petioli 2.5 cm. longi. Amenta densiflora. Bractea et ovarium in sicco fusco-punctulata. Stigma carnosum et glabrum.

8. *P. ADENOCARPA*, foliis modice petiolatis ellipticis basi ima subacutis apice obtusis utrinque subdense pilosis 3-nerviis, amentis axillaribus terminalibusque, folia parum superantibus filiformibus, bractea orbiculari, bacca emersa rotundato-ovata in sicco glandulis rugulosa et apice oblique rostellata.

In provincia Larecaja viciniis Sorata Quiliguaya ad rivum in umbrosis, alt. 2700 m., Aprilli (Mandon, no. 1116 in Herb. Mus. Par.).

Herba caule e basi radicante erecto et simplici 25 cm. longi dense pilosulo in sicco filiformi, internodiis fere 1 cm. longis. Limbi 2–3.5 cm. longi et 1.5 cm. lati in sicco tenuiter membranacei, et pellucidi. Petioli ad 7 mm. longi, pilosuli. Amenta subdensiflora. Bacca 1 mm. paullo superans.

9. *P. DUMETICOLA*, foliis modice petiolatis subdensis ovatis utrinque obtusis supra ad nervos et subtus ubique et subdense pilosis fusco-punctulatisque 5-nerviis, amentis axillaribus terminalibusque modice pedunculatis ipsis filiformibus et folia vix duplo superantibus, bractea orbiculari fusco-punctulata, ovario rhachi subimpresso oblongo apice obtuso et oblique stigmatifero.

In provincia Larecaja, viciniis Ananea cerro de Tuiki in dumetosis, alt. 3150 m., Maio (Mandon, no. 1117 in Herb. Mus. Par.).

Herba erecta, caulibus ramulosis in sicco coriaceis circiter 4 mm. crassis et junioribus dense pilosis, internodiis circiter 6 mm. longis. Limbi ad 3.5 cm. longi et ad 22 mm. lati, in sicco firmi et opaci. Petioli 5 mm. longi pedunculique eis paulo longiores hirtelli. Amenta in sicco fusco-punctulata densiflora. Stigma carnosum puberulumque.

10. *P. BREVISPICA*, foliis supra adpresse puberulis subtus glabris et fusco-punctulatis inferioribus majoribus longe petiolatis e basi cuneata obovato-ellipticis apice obtusis 7-plinervis superioribus gradatim minoribus, amentis in apice ramulorum axillaribus terminalibusque quam folia inferiora pluries brevioribus longiuscule pedunculatis et densifloris, bractea orbiculari, ovario emerso obovato sub apice oblique stigmatifero.

Bang, no. 2641.

Herba erecta ramulosa, ramulis glabris coriaceis. Limbi in sicco rigido-membranacei subpellucidi crebre pellucido-punctulati foliorum inferiorum 4 cm. longi et 27 mm. lati cum petiolis 2 cm. longi, superiorum multo minores an adulti? Pedunculi 5 mm. longi. Amenta 9 mm. longa. Antherae ellipticae quam filamenta paullo breviores. Stigma papillosum.

†† *Ovarium apice oblique complanatum et scutatim auctum, antice stigmatiferum. Bacca oblique rostrata.*

11. *P. PELTIFOLIA*, foliis magnis longe petiolatis ample ovatis fere ad 4 cm. supra basin peltatis basi rotundatis vel leviter repandis apice breviter acuminatis supra sat dense et adpresse pilosis subtus densissime villosis, nervo centrali fere ad $\frac{2}{3}$ longitudinis nervos utrinque 5 adscendentes supra basin et 2-3 e basi divaricantes mittente, amentis in apice caulis oppositifoliis quam folia brevioribus, pedunculis quam petioli brevioribus et dense villosis, rhachi adulta dense villosa, bractea orbiculari, ovario emerso ovato apice oblique rostrato et antice complanato sub rostro stigma carnosum gerente.

In Bolivia (Rusby, sine numero in Herb. Columbia University).

Caulis dense villosus circiter 6 mm. crassus. Limbi in sicco membranacei, circiter 24.5 cm. longi et 14.5 cm. lati. Petioli ad 11 cm. longi. Pedunculi adulti circiter 3 cm. longi. Amenta ut videtur adulta 6-7 cm. longa et 6 mm. crassa.

12. *P. COBANA* C. DC. Bot. Gaz. 19: 260. 1894.

In Bolivia (Rusby, sine num. in Herb. Columbia University).

** *Folia opposita.*

13. *P. CIRCINATA* Link, Jahrb. 1³: 64. 1820.

Ad confluentem fluminum Beni et Madre de Dios (Rusby, no. 2208 in Herb. Columbia University).

14. *P. BLANDA* Kunth, H.B.K. Nov. Gen. 1: 67.

In Bolivia (Rusby, no. 1819^b in Herb. Columbia University).

*** *Folia verticillata.*

15. *P. MULTISPICA*, foliis 4-3-verticillatis brevissime petiolatis utrinque hirtellis margineque ciliatis e basi acuta inferioribus minoribus obovatis superioribus vero lanceolatis 3-nerviis, amentis axillaribus terminalibusque in apice caulis numerosis et filiformibus folia fere 4-plo superantibus longiuscule pedunculatis, bractea orbiculari, ovario emerso apice oblique stigmatifero, bacca subglobosa laevi et glabra.

In Bolivia (Rusby, no. 331 in Herb. Cand.; Bang, no. 2639 in Herb. Columbia University).

Erecta inferne radicans, circiter 20 cm. alta, caule dense hirsuto in sicco 3 mm. crasso. Limbi superiores ad 22 mm. longi vix 1 cm. lati. Petioli ad 2.5 mm. longi. Amenta haud densiflora. Stigma minutum.

Species *P. camptotrichae* Miq. proxima.

16. *P. SAXICOLA*, foliis 3-5-verticillatis brevissime petiolatis superioribus ellipticis basi acutis apice obtusiusculis utrinque adpresse et dense pilosulis 3-nerviis, amentis axillaribus terminalibusque pedunculatis, filiformibus folia parum superantibus, bractea rotundato-elliptica, ovario emerso obovato glandulis consperso apice stigma minutum glabrum oblique gerente, bacca elliptica laevi apice brevissime oblique acutata.

17. *P. STUBELII* C. DC. Bull. Torr. Bot. Club, 19: 255. 1892.

Tunari (Otto Kuntze), San Pedro in rupibus (Herb. Mus. Par.).

18. *P. INAEQUALIFOLIA* R. et Pav. Fl. Per. 1: 30. *pl. 46, a.*

In provincia Larecaja, alt., 269 m., Augusto (Mandon, no. 1120 *bis* in Herb. Mus. Par.).

19. *P. GALIODES* Kunth, H.B.K. Nov. Gen. 1: 71.

In provincia Larecaja, viciniis Sorata, carro del Iminapi in umbrosis (Mandon, no. 1119 in Herb. Mus. Par.).

In provincia Larecaja viciniis Sorata prope Challapampa in petrosis, Decembri (Mandon, no. 1118 in Herb. Mus. Par.).

Herba caule dense et depresso pilosulo inferne radicante superne ramuloso, in sicco circiter 4 mm. crasso. Folia inferiora obovata,

superiorum limbi in sicco membranacei subopaci ad 2 cm. longi et 7 mm. lati. Petioli vix 2 mm. longi. Pedunculi pilosuli circiter 12 mm. longi.

20. *P. ACEROANA*, glabra foliis plerumque 4-verticillatis breviter petiolatis e basi acuta oblongo-obovatis vel oblongo-ellipticis in sicco subcoriaceis, amentis terminalibus longe pedunculatis ipsis folia circiter duplo superantibus filiformibus densifloris, bractea orbiculari, ovario emerso oblongo, summo apice stigma carnosum glabrum gerente.

In provinciā Acero, Novembri et Decembri (Weddel, no. 3615 in Herb. Mus. Par.).

Herba repens, ramuli erecti cum amentis circiter 6 cm. longi in sicco coriacei 1 mm. crassi. Petioli vix 3 mm. longi. Pedunculi circiter 3 cm. longi.

Species rhachi glabra a *P. reflexa* Diet. ovariis haud immersis limbis angustioribus ramulisque glabris a *P. Bolivien*s C. DC. discrepans.

21. *P. TOMINANA*, foliis parvis plerumque quaternis brevissime petiolatis ellipticis basi et apice obtusis utrinque glabris apice ciliolatis, nervis inconspicuis, amentis terminalibus longiuscule pedunculatis ipsis folia circiter duplo superantibus densifloris et filiformibus, rhachi hirtella, bractea orbiculari, ovario emerso oblongo summo apice stigma carnosum et glabrum gerente.

In prov. Tomina, Depart. Chuquisata, Decembri (Weddel, no. 3109 in Herb. Mus. Par.).

Herba e basi radicante ramulis hirtellis 4–5 cm. longis in sicco coriaceis 1 mm. crassis. Limbi in sicco coriacei subpellucidi adspectu enervi 6 mm. longi. Petioli 1 mm. longi. Pedunculi hirtelli circiter 1 cm. longi. Amenta florentia circiter 12 mm. longa.

Species *P. reflexae* Diet. proxima foliis multo minoribus ovarioque emerso ab ea discrepans.

22. *P. PSILOSTACHYA* C. DC. Mem. Soc. Phys. 32: *pl.* 54. *f.* 6.

In prov. Yungas, alt. 6000 ped. (Rusby, no. 2210 in Herb. Columbia University).

23. *P. REFLEXA* Diet. Sp. 1: 180.

In prov. Yungas, alt. 6000 ped. (Rusby, no. 2203 in Herb. Columbia University).